SUPER®

SUPER® PDSBM-LN1
SUPER® PDSBM-LN2
SUPER® PDSBM-LN2+

USER'S MANUAL

Revision 1.0c

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Manual Revision 1.0c

Release Date: March 10, 2009

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERO® PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ motherboard. This motherboard supports a single Intel Xeon 3000 Series/Core 2 Duo/Pentium D/Pentium 4 Processor with a system bus speed of up to1066 MHz. The Intel Xeon 3000 Series/Core 2 Duo/Pentium D/Pentium 4 Processor supports the 775-Land Grid Array Package that interfaces with the motherboard via an LGA775 socket. With the support of the Quad-Core/Dual-Core Technology, Wide Dynamic Execution, FSB Dynamic Bus Inversion (DBI), Advanced Digital Media Boost, Smart Memory Access, and Thermal Management 2 (TM2), the PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ delivers unparalleled system performance and great power efficiency in a slim size package. Please refer to the motherboard specifications pages on our website (http://www.supermicro.com/Products/) for updates on supported processors. This product is intended to be installed and serviced by professional technicians.

Manual Organization

Chapter 1 describes the features, specifications and performance of the mainboard and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS POST Messages.

Appendix B lists BIOS POST Codes.

Appendix C and Appendix D list Software Installation Instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Warning: Important information given to ensure proper system installation or to prevent damage to the components

Note: Additional Information given to differentiate various models or provides information for correct system setup.

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Chapter 1
Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

All the following items are included in the retail box only.

One (1) Supermicro Mainboard

Four (4) SATA cables (CBL-0044L)

One (1) IDE hard drive cable (CBL-0036L-03)

One (1) floppy drive ribbon cable (CBL-022L)

One (1) I/O shield (PT7L) (For PDSBM-LN2/LN2+)

One (1) I/O shield (PT2L) (For PDSBM-LN1)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual (MNL-0942)

Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc. 980 Rock Ave. San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information) support@supermicro.com (Technical Support)
Website:	www.supermicro.com

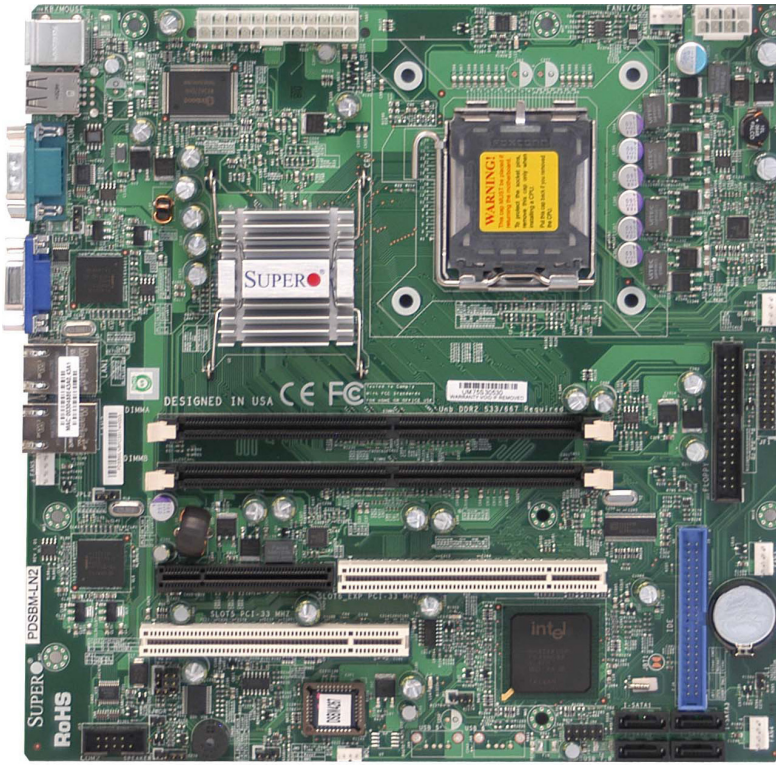
Europe

Address:	Super Micro Computer B.V. Het Sterrenbeeld 28, 5215 ML 's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information) support@supermicro.nl (Technical Support) rma@supermicro.nl (Customer Support)

Asia-Pacific

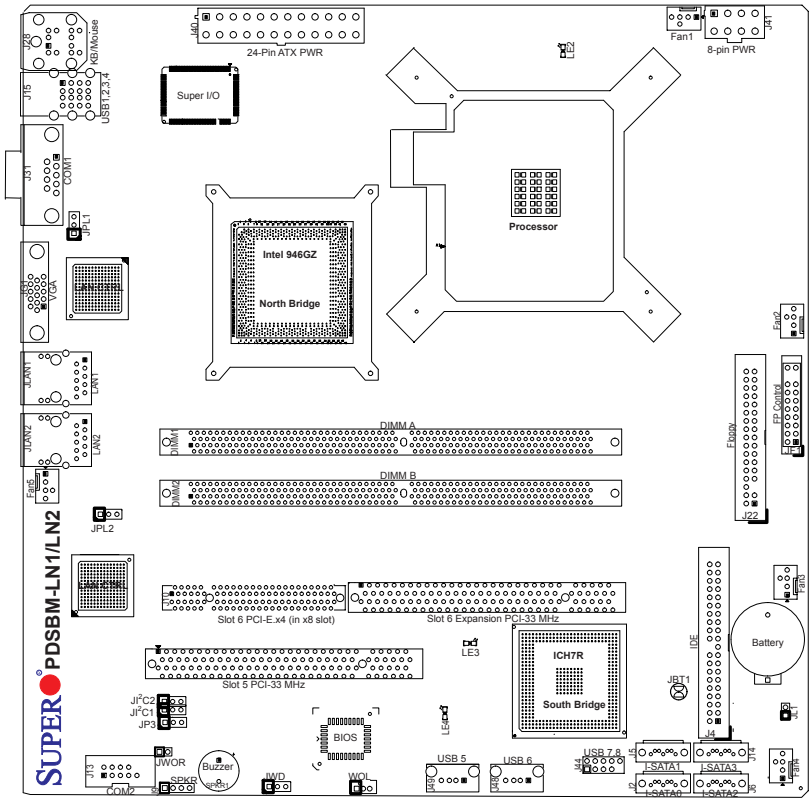
Address:	Super Micro Computer, Inc. 4F, No. 232-1 Liancheng Road Chung-Ho 235, Taipei Hsien, Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Website:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139
RMA:	http://www.supermicro.com/support/rma

SUPER® PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ Image



Note:All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

Motherboard Layout
(not drawn to scale)



Important Notes to the User

- Jumpers not indicated are for testing only.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "▪" indicates the location of "Pin 1".
- LAN2 Port and the second LAN Controller are available on the PDSBM-LN2/ PDSBM-LN2+ only.
- TPM (Trusted Platform Modules) Support is available on the PDSBM-LN2+ only. To use this feature, please enable TPM support in the BIOS.

PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+

Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	(*See Chapter 2)
JI^{2}C1/JI^{2}C2	SMB to PCI Slots	Open/Open (Disabled)
JP3 (*PDSBM-LN2+ Only)	Trusted Platform Module Ena.	Pins 1-2 (Enabled)
JPL1/JPL2	Giga-bit LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JWD	Watch Dog Timer Out Option	Pins 1-2 (Reset)

Connectors	Description
ATX PWR (J40)	ATX 24-Pin Power Connector
8-Pin ATX PWR (J41)	12V 8-pin Power Connector (required)
Buzzer (SPKR1)	Internal Buzzer
Chassis Intrusion (JL1)	Chassis Intrusion Header
COM1 (J31), COM2 (J13)	COM Port/Serial Port 1 & Port 2 Connectors
DIMMA/DIMMB (DIMM1/2)	Memory (DIMM) Slot A/Slot B
Fans 1-5	Fan1: CPU Fan, Fans 2-5: Chassis Fan Headers
Floppy (J22)	Floppy Disk Connector
FP Control Panel (JF1)	Front Control Panel Header
LAN 1/LAN2*(JLAN1/JLAN2)	Ethernet RJ45 (Gigabit LAN) Ports 1/2 (See Below.)
IDE (J4)	IDE Hard Drive
I-SATA#0-3(J2/J5/J6/J14)	Intel SATA (#0/1/2/3) Headers
KB/Mouse (J28)	PS/2 Keyboard/Mouse
Slot 5 (PCI1)	PCI 33 MHz Slot
Slot 6 (J10)	PCI-Express x4 (in a x8 slot)
Slot 6 Expansion (PCI2)	PCI 33 MHz Slot
Speaker (J9)	Speaker Header
USB 1/2 (J15)	(Back Panel) Universal Serial Ports 1/2
USB 3/4 (J15)	(Back Panel) Universal Serial Ports 3/4 (See Below.)
USB 5 (J49)/USB 6 (J48)	(Internal) Universal Serial Ports 5/6 (See Below.)
USB 7/8/ (J44)	(Front Panel) USB ports 7/8 (J44)
VGA (JG1)	Video/Graphics Connector
WOL (WOL)	Wake-On-LAN Header
WOR(JWOR)	Wake-On-Ring Header

LED Indicators	Description (*See Chapter 2)
LE2 LED	CPU VRM Overheat LED Indicator
LE3/LE4 LEDs	POST (Power-on-self-test) Code LED Indicators

* See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
* LAN2 Port and the second LAN Controller are available on the PDSBM-LN2/LN2+ only.
* USB 3/4/5 are available on the OEM Version Only.

Motherboard Features

CPU

- Single Intel Xeon 3000 Series/Core 2 Duo Processor/Pentium D Processor/ Pentium 4 Processor with a system bus speed of up to 1066 MHz

The Intel Xeon Core 2 Duo Processor supports:

- Quad-Core/Dual-Core Technology
- FSB Dynamic Bus Inversion (DBI)
- Intel Smart Memory Access
- Intel Dynamic Power Coordination

Memory

- Supports unbuffered single or dual channel Non ECC DDR2 up to 4GB/s (DDR2 667/533) for single channel mode or dual-channel Interleaved mode.
- Supports a maximum memory bandwidth of 5.33GB/s in single channel or dual-channel asymmetric mode, or 10.67GB/s in dual-channel interleaved mode
- Supports 256 Mb, 512 Mb, 1 Gb technologies for x8 and x16 devices
- Supports up to 32 simultaneous open page per channel
- Supports the opportunistic refresh scheme and a memory thermal management to monitor reads and/or writes
- Supports improved flexible memory architecture

Chipset

- Intel 946GZ GMCH (North Bridge), ICH7R (South Bridge)

Expansion Slots

- One (1) PCI-Express x4 in a x8 Slot (Slot 6: J10)
- Two (2) 32-bit PCI 33MHz (Slot 5: PCI1 and Slot 6: PCI2)

BIOS

- 8 Mb Firmware Hub Phoenix BIOS® Flash BIOS
- DMI 2.3, PCI 2.2, ACPI 1.0/2.0, Hardware BIOS virus protection, SMBIOS 2.3, and Plug and Play (PnP)

PC Health Monitoring

- Onboard voltage monitors for CPU core, Memory Voltage, Chipset Voltage, +1.8V, +3.3V, +3.3V standby, +5V, +5V, Standby, VBat and ±12V
- Fan status monitor with firmware 4-pin (Pulse Width Modulation) and 3-pin (Tachometer) fan speed control
- Low noise fan speed control
- CPU 4-Phase-switching voltage regulator
- SuperoDoctor III, Watch Dog, NMI
- Power-up mode control for recovery from AC power loss
- I^2C temperature sensing logic

- CPU/System overheat LED and control
- System resource alert via Supero Doctor III
- CPU Thermal Trip support
- Thermal Monitor 2 (TM2) support
- PECI (Platform Environment Configuration Interface) support

ACPI Features

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- External modem ring-on

Onboard I/O

- Built in ICH7R SATA Controller, 4 connectors for 4 devices (300MB/s)
- Intel ICH7R South Bridge supports RAID 0, 1, 5, 10 in the Windows OS environment
- 1 floppy port interface (up to 2.88 MB)
- 1 Fast UART 16550 compatible serial port and 1 header
- Dual Intel 82573L Gigabit Ethernet Controllers support 2 Gigabit LAN ports (*For PDSBM-LN2/LN2+ only)
- Single Intel 82573L Gigabit Ethernet Controllers support a Gigabit LAN port (*For PDSBM-LN1 only)
- PS/2 mouse and PS/2 keyboard ports
- One IDE hard drive supports single/dual channel(s)
- Two USB (Universal Serial Bus) 2.0 ports for a speed of up to 480Mbps on the backpanel and two USB headers that can be accessed from the front panel
- Two additional rear USB ports and two Internal USB connectors are available for the OEM version of motherboard
- Built-in GMCH and Onboard VGA Connector
- Winbond Super I/O 83627DHG

Other

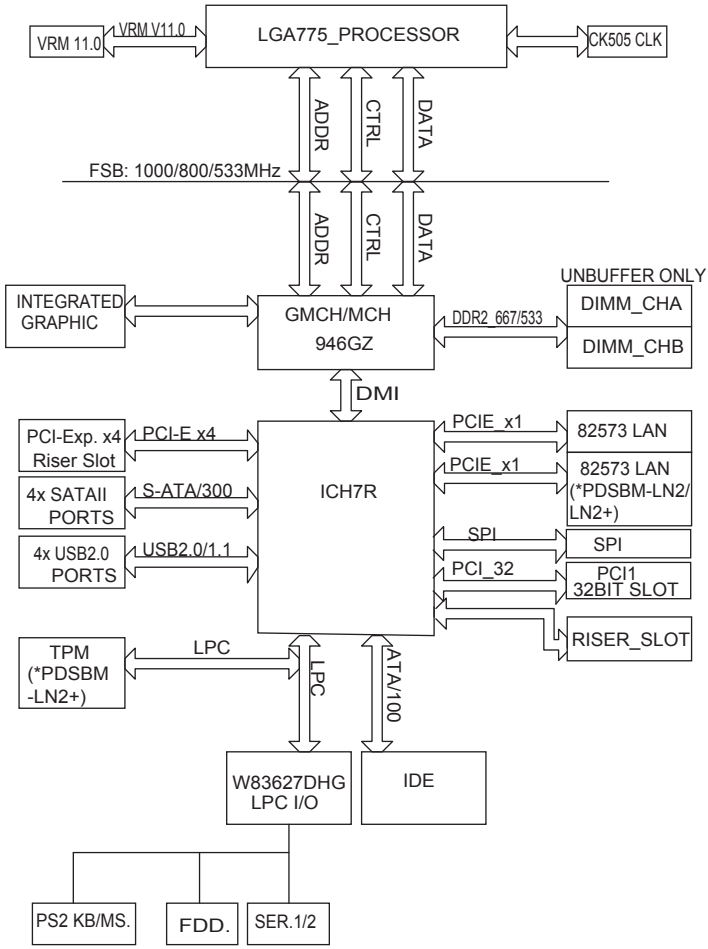
- Wake-on-LAN
- Wake-on-Ring (WOR)
- Onboard CPU VRM Overheat LED ("LE2")
- Chassis Intrusion Header and Detection
- Pb Free

CD Utilities

- BIOS flash upgrade utility
- Drivers and software for Intel 946GZ chipset utilities

Dimensions

- Micro ATX form factor, 9.6" x 9.6" (243.8 x 243.8 mm)



The 946GZ Chipset:
System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the following pages for the actual specifications of each motherboard.

1-2 Chipset Overview

The Intel 82946GZ chipset, designed for use with the Intel Xeon 3000 Series/Core 2 Duo processor and Pentium D/Pentium 4 Processor in desktop platforms, contains two components: GMCH (North Bridge) and ICH7R (South Bridge). The GMCH is used for the host bridge, and the ICH7R, for the I/O subsystems.

Graphics Memory Controller Hub (GMCH)

The GMCH manages the data flow between its four interfaces: the processor interface (FSB), the system memory interface (DRAM controller), the integrated graphics interface, the External Graphics interface, and the I/O Controller through DMI interface. It provides bus arbitration between the four interfaces when each initiates transactions. The processor interface supports the Pentium 4 subset of the Extended Mode of the Scalable Bus Protocol. The GMCH supports a 64-byte Cache Line, 36-bit host addressing, decoding up to 4 GB of the CPU's memory address space, allowing the processor to access the entire 4 GB of the GMCH's memory address space. The GMCH also supports one or two channels of SDRAM and the PCI Express-based graphics attached devices.

The Intel 946GZ platform supports the seventh generation I/O Controller Hub (Intel ICH7R) to provide a multitude of I/O related features. The Direct Media Interface (DMI) provides the chip-to-chip connection between the GMCH and the ICH7R.

Intel I/O Controller Hub 7R (ICH7R)

The I/O Controller (ICH7R) provides the data buffering and interface arbitration required for the system to operate efficiently. It also provides the bandwidth needed for the system to maintain its peak performance. The ICH7R supports PCI slots, Serial ATA ports, USB 2.0 ports and dual channel IDE devices.

Intel ICH7R System Features

The I/O Controller Hub provides the I/O subsystem with access to the rest of the system. The ICH7R supports the following:

*Serial ATA (SATA) Controller with HostRAID support

*Advanced Configuration and Power Interface, Version 2.0 (ACPI)

*Advanced Host Controller Interface (AHCI)

*Low Pin Count (LPC) Interface

*Serial Peripheral Interface (SPI)

*Compatibility Modules (DMA Controller, Timer/Counter, Interrupt Controller)

1-3 PC Health Monitoring

This section describes the PC health monitoring features of the PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+. The motherboard has an onboard System Hardware Monitor chip that supports PC health monitoring.

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power on state. See the Power Lost Control setting in the BIOS chapter of this manual to change this setting. The default setting is **Last State**.

Onboard Voltage Monitors for the CPU Core, Chipset Voltage, Memory Voltage, +1.8V, +3.3V, +3.3V standby, +5V, +5V Standby, Vbat and ±12V

The onboard voltage monitor will scan these voltages continuously. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor by using SD III.

Fan Status Monitor with Software

The PC health monitor can check the RPM status of the cooling fans via Supero Doctor III.

CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature reaches the pre-defined threshold, the CPU thermal trip feature will be activated and it will send a signal to the Speaker LED and, at the same time, the CPU speed will be decreased.

1-4 Power Configuration Settings

This section describes features of your motherboard that deal with power and power settings.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, it will function like a normal keyboard during system boot-up.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user presses the power button, the system will enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. The power will turn off and no power will be provided to the motherboard.

Wake-On-Ring (WOR) Header

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

1-5 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates of 1 GHz and faster.

The SUPER® PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ accommodates 12V ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. A 2-Amp of current supply on a 5V Standby rail is strongly recommended.

It is strongly recommended that you use a high quality power supply that meets 12V ATX power supply Specification 1.1 or above. It is also required that the 12V 8-pin power connection (J41) be used for adequate power supply. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-6 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports two 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.

It also provides two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2
Installation

2-1 Static-Sensitive Devices

Electro-Static Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge. Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Motherboard Installation

(Note: Be sure to mount the motherboard into the chassis before you install the CPU onto the motherboard.)

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Make sure that the metal standoffs click in or are screwed in tightly. Then, use a screwdriver to secure the motherboard onto the motherboard tray. (**Note**: some components are very close to the mounting holes. Please take precautionary measures to prevent damage done to these components when you install the motherboard to the chassis.)

To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

2-3 Processor and Heatsink Installation

When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU LGA 775 socket before you install the CPU heatsink.

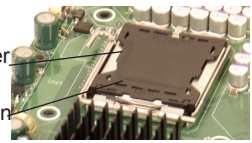
2. The Intel Xeon 3000/Core 2 Duo/Pentium boxed CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.

4. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.

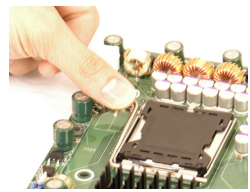
5. When purchasing an Intel LGA boxed CPU or when receiving a motherboard with an CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

6. Refer to the MB Features Section for more details on CPU support.

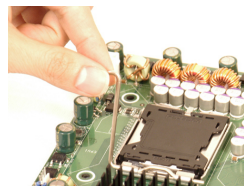
Installation of the FC-LGA6 Processor

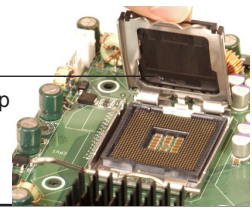


1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.



2. Gently lift the load lever to open the load plate.





3. Use your thumb and your index finger to hold the CPU at the North Center Edge and the South Center Edge of the CPU.

4. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner marked with a triangle cutout.

5. Align the CPU key, which is the semi-circle cutout below a golden dot against the socket key, the Notch on the same side of the triangle cutout on the socket.

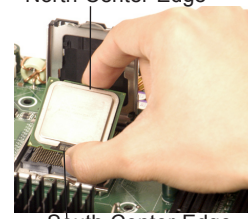
6. Once aligned, carefully lower the CPU straight down to the socket. (**Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

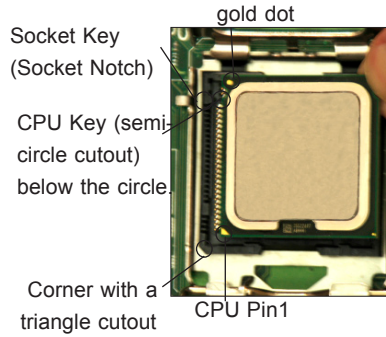
7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

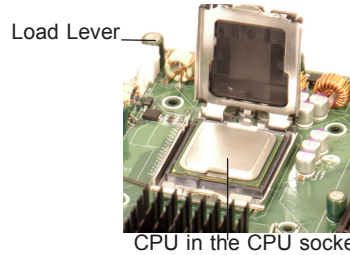
8. Use your thumb to gently push the load lever down to the lever lock.

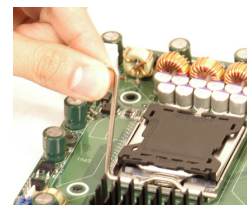
9. If the CPU is properly installed into the socket, the plastic PnP cap will be automatically released from the load plate when the load lever is pushed in the lever lock. Remove the PnP cap from the motherboard.

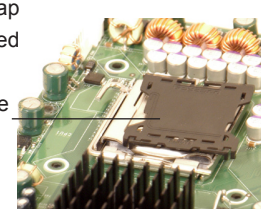
(**Warning**: Please save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.)











2-4 Installing DIMMs

Note: Check Supermicro's website for recommended memory modules.

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (See step 1).

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM A. The memory scheme is interleaved so you must install both modules of memory at the same time, beginning with DIMM A, then Bank B.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support

The PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ supports up to 4 GB Unbuffered Non-ECC DDR2 533/667 in 2 DIMMs. Populating DIMM modules with a pair of memory modules that are of the same size and of the same type in DIMM A, and DIMM B will result in interleaved memory.

Notes:

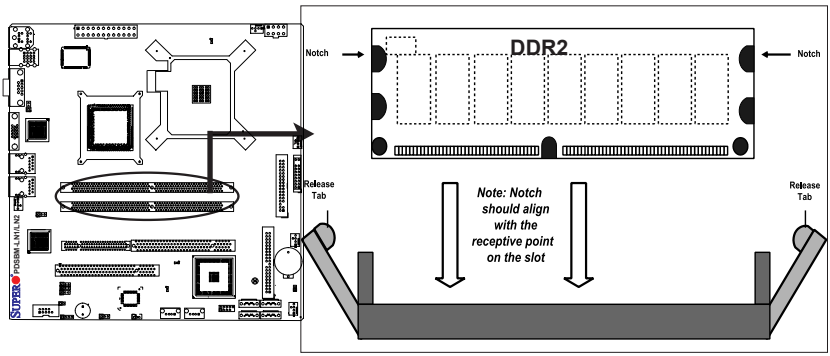
1. Due to the OS limitations, some operating systems may not show more than 4 GB of memory.

2. For Microsoft Windows users: Microsoft implemented a design change in Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the Physical Address Extension (PAE) mode behavior which improves driver compatibility. For more information, please refer to the information posted on Microsoft's website at: http://support.microsoft.com/kb/888137.

3. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the following Memory Availability Table for details.)

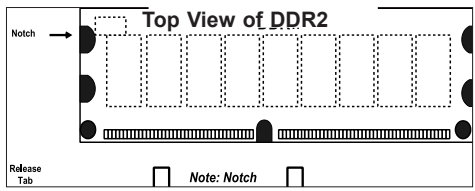
Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

Installing and Removing DIMMs



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

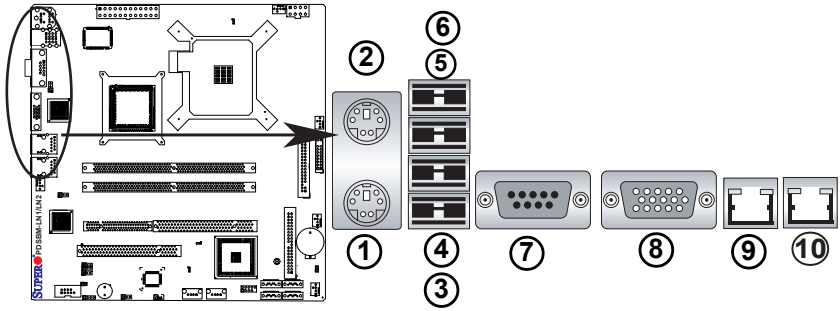
To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



2-5 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See the figure below for the colors and locations of the various I/O ports.

A. Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

Back Panel Connectors

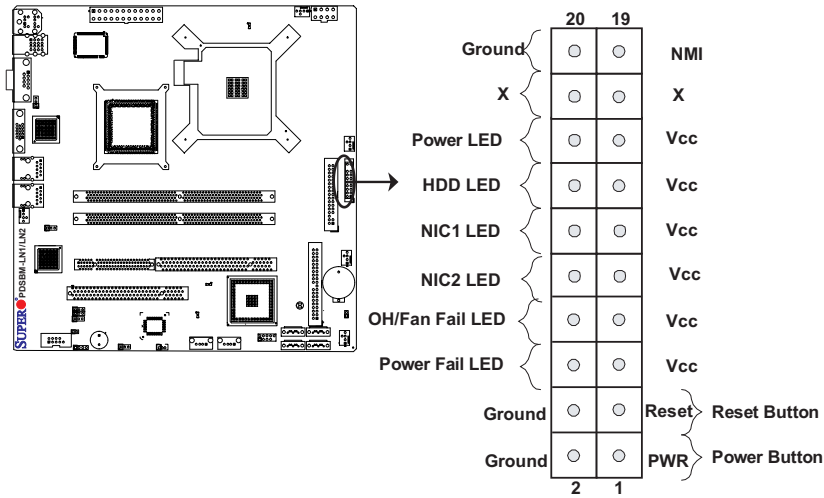
1. Keyboard (Purple)
2. PS/2 Mouse (Green)
3. Back Panel USB Port 1
4. Back Panel USB Port 2
5. Back Panel USB Port 3 (*OEM only)
6. Back Panel USB Port 4 (*OEM only)
7. COM Port 1 (Turquoise)
8. VGA (Blue)
9. Gigabit LAN Port 1
10. Gigabit LAN Port 2

(See Section 2-5 for details.)

B. Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See the figure below for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

JF1 Header Pins



C. Front Control Panel Pin Definitions

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

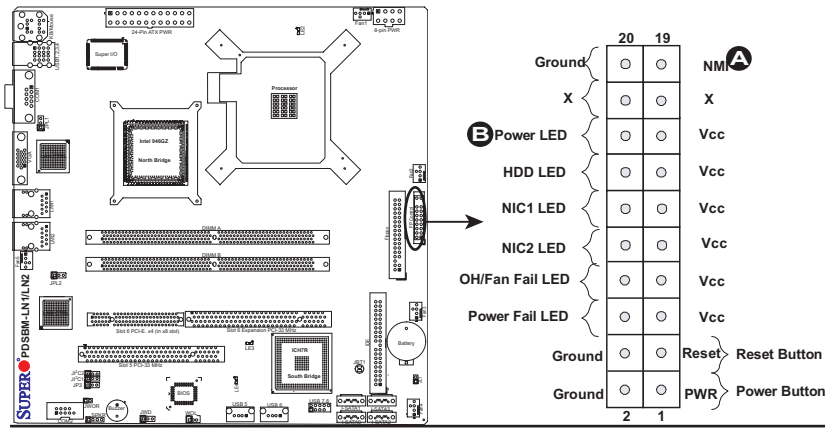
Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+5V
16	Ground

A. NMI

B. PWR LED



HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS and Serial ATA). See the table on the right for pin definitions.

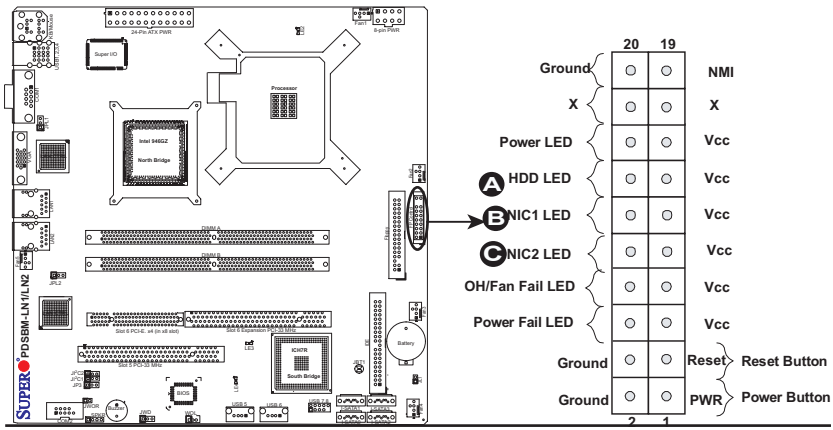
HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	LED_Anode
14	HD Active

NIC1/NIC2 LED Indicators (*For PDSBM-LN2/LN2+ only)

The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1 and for GLAN Port2 is on Pins 9 and 10. Attach a NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	Vcc
10/12	Ground

A. HDD LED
B. NIC1 LED
C. NIC2 LED



Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	LED_Anode
8	OH/Fan Fail LED Signal

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

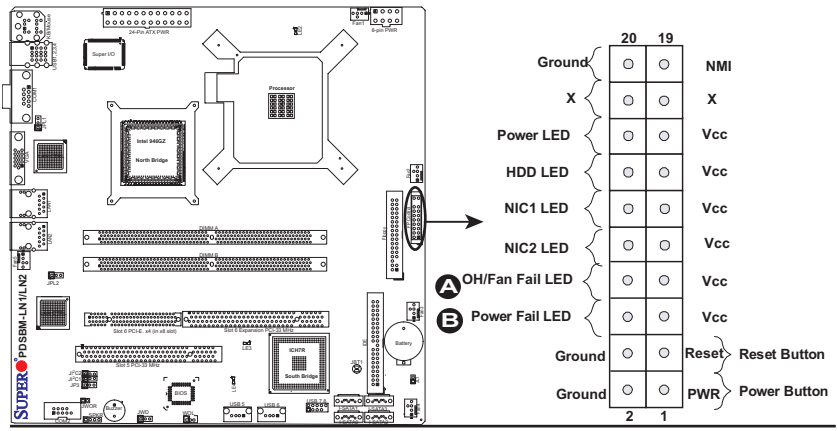
Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Ground

A. NIC1 LED

B.OH/Fan Fail LED



Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

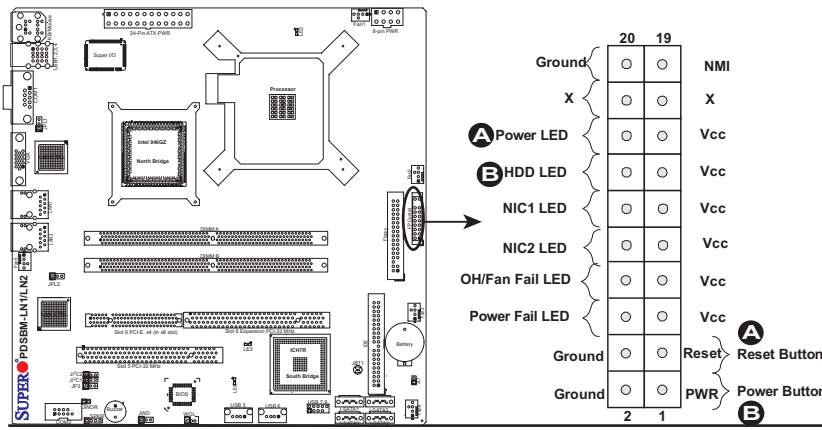
Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	GND

A. Reset

B. PWR Button



2-6 Connecting Cables

ATX/Auxiliary Power Connectors

The 24-pin ATX main power connector is located at J40, and a 12V 8-pin power connector is located at J41 on the motherboard. These power connectors meet the SSI EPS 12V specification. The 8-pin 12V PWR supply is also required to provide adequate power to the CPU. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions

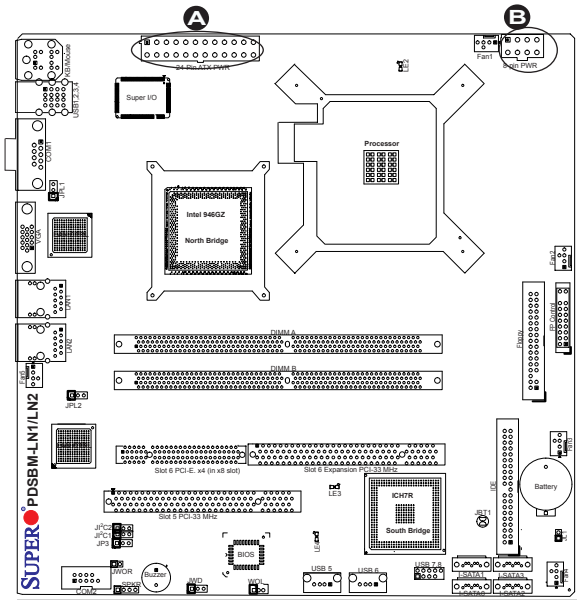
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Required Connection

12V 8-pin Power Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection



A. 24-pin ATX PWR
B. 8-pin Aux. PWR

Universal Serial Bus (USB)

Four USB 2.0 (Universal Serial Bus) ports (Ports 1/2/3/4) are located on the I/O Backplane, and two USB headers: USB 7/8 (J44) can be accessed from the front panel. In addition, two USB Ports: USB 5 (J49) and USB 6 (J48) are designed for internal use only. Please note that USB 3/4, USB5, and USB 6 are for OEM only. See the tables on the right for pin definitions.

Back Panel USB

Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Front Panel USB Pin Definitions (USB4)

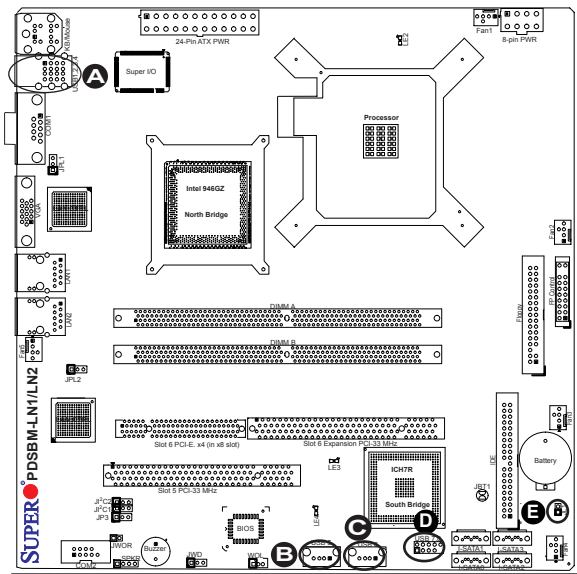
USB5/7 Pin #	USB5/7 Definition	USB6/8 Pin #	USB6/8 Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Intrusion Input
2	Ground

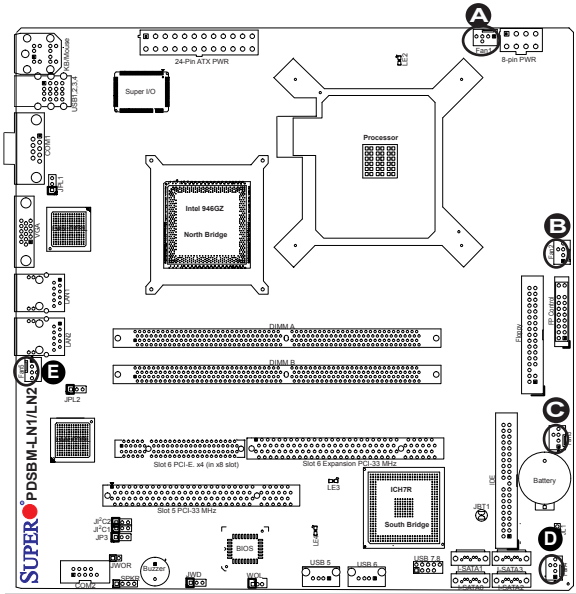


A. Back panel USB Ports 1/2/3/4
B. Front panel USB 5
C. Front Panel USB 6
D. Front Panel USB 7/8
E. Chassis Intrusion

Fan Headers

The PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ has five chassis/system fan headers (Fan1 to Fan5), including a CPU Fan (Fan 1). (**Note**: Pins 1-3 of 4-pin fan headers are backward compatible with the traditional 3-pin fans). See the table on the right for pin definitions. (The onboard fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting. **Note**: The Manufacturer Default is set to Disabled to allow the fans to constantly run at full speed. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans on the motherboard.)

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	Pulse Width Modulation



A. Fan1
B. Fan2
C. Fan3
D. Fan4
E. Fan5

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located at J28. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

PS/2 Keyboard and Mouse Port Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

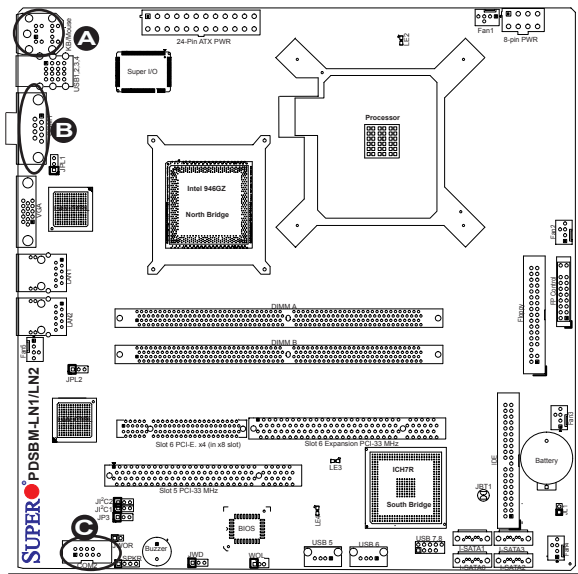
Serial Ports

COM1 (J31) is a connector located on the IO Backpanel, and COM2 is a header located at J13. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

(Pin 10 is available on COM2 only. NC: No Connection.)



A. Keyboard/Mouse
B. COM1
C. COM2

Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to wake up when receiving an incoming call to the modem when the system is in the suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)

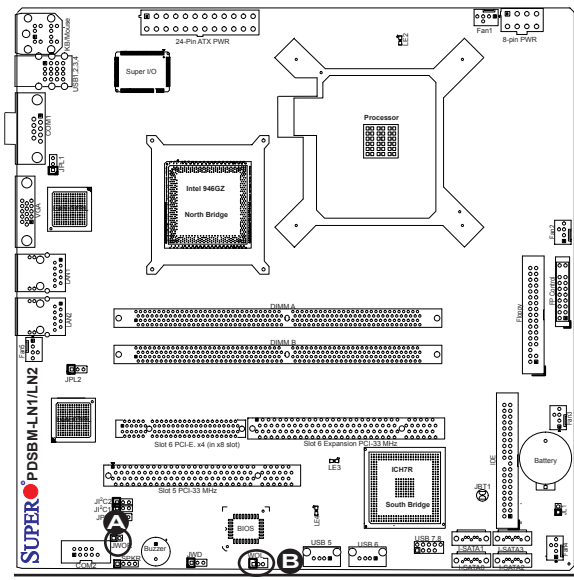
Pin#	Definition
1	Ground
2	Wake-up

Wake-On-LAN

The Wake-On-LAN header is located at JWOL on the motherboard. See the table on the right for pin definitions. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (JWOL)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up



A. WOR

B. WOL

LAN 1/LAN 2 (Giga-bit Ethernet Ports)

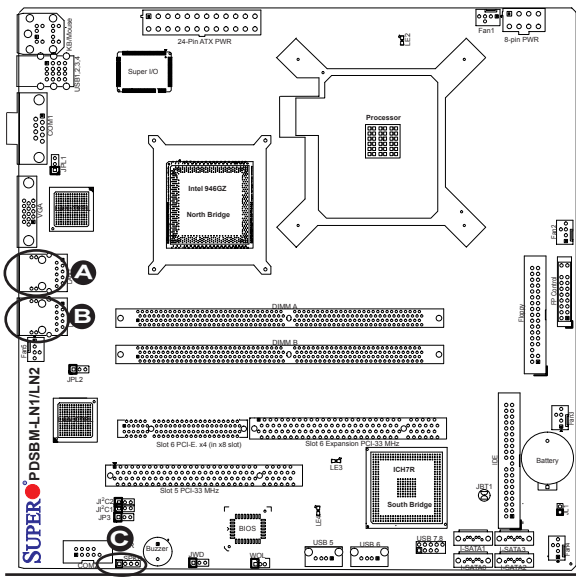
Two G-bit Ethernet ports are located at JLAN1 and JLAN2 on the IO backplane. This port accepts RJ45 type cables. (**Note**: JLAN2 is for the PDSBM-LN2/LN2+ only.)

GLAN1

Speaker

A Speaker/Buzzer header (J9) is located on the motherboard. See the table on the right for speaker pin definitions. **Note**: The speaker connector pins are for use with an external speaker. If you wish to use the on-board speaker, you should close pins 3-4 with a jumper.

Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 3-4	Internal Speaker
Pins 1-4	External Speaker



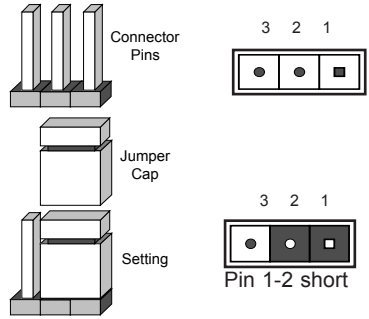
A. GLAN1
B. GLAN2 (PDSBM-LN2/LN2+ only)
B. Speaker/Buzzer

2-7 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

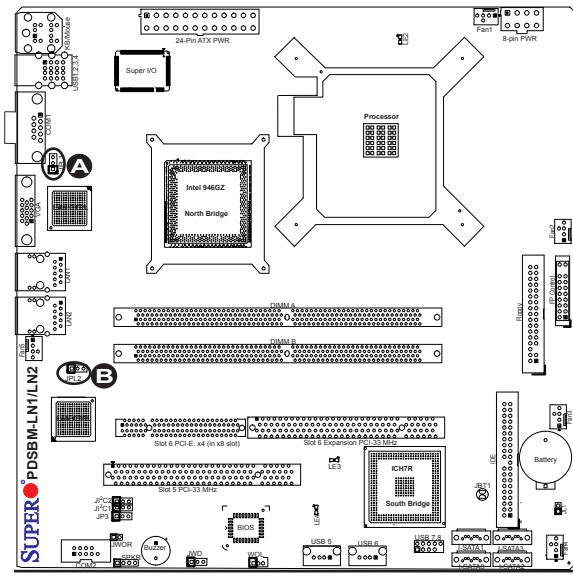
Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



GLAN Enable/Disable

JPL1/JPL2 enable or disable GLAN Port1/Port 2 on the motherboard. See the table on the right for jumper settings. The default setting is enabled. **Note**: JPL2 is for PDSBM-LN2/LN2+ only.

GLAN Enable Jumper Settings	
Pin#	Definition
1-2	Enabled (*default)
2-3	Disabled



A. GLAN Port1 Enable

B. GLAN Port2 Enable

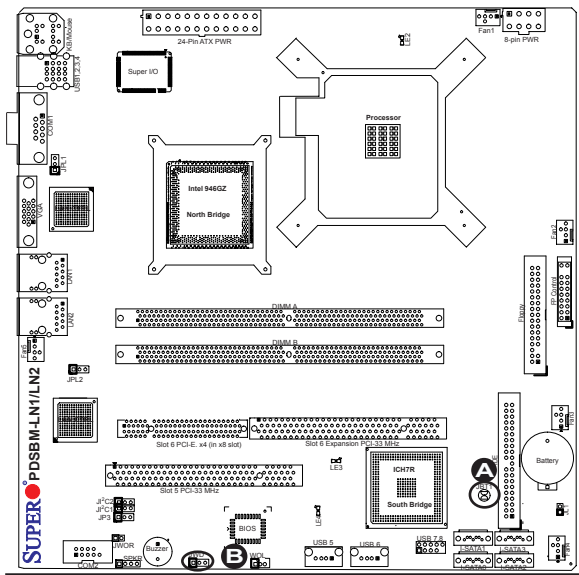
CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. **Note:** For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

Watch Dog Enable/Disable

Watch Dog is a system monitor that can reboot the system when a software application hangs. Close Pins 1-2 to reset the system if an application hangs. Close Pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. Watch Dog must also be enabled in the BIOS. If this jumper is set to Disabled, the Watch Dog Settings listed in the BIOS will be ignored. The functionality of WD will be completely disabled. See the table on the right for jumper settings.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset (*default)
Pins 2-3	NMI
Open	Disabled



A. Clear CMOS

B. Watch Dog Enable

PCI/PCI-E Slots to SMB Speeds

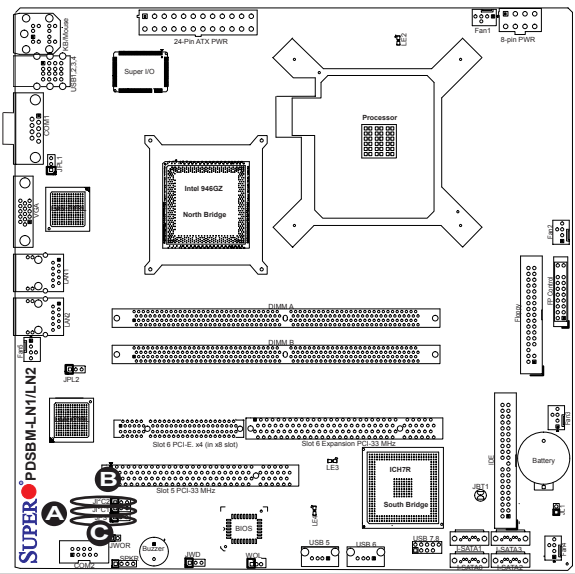
Jumpers JI²C1/JI²C2 allow you to connect PCI/PCI-Express slots to the System Management Bus. The default setting is open to disable the connection. See the table on the right for jumper settings.

SMBus to PCI-X/PCI-Exp Slots Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (*Default)

TPM Enable (PDSBM-LN2+ only)

Jumper JP3 allows you to enable or disable TPM (Trusted Platform Module) support. The default setting is pins 1-2 to enable this function. See the table on the right for jumper settings.

TPM Support Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (*Default)
2-3	Disabled



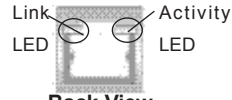
A. JI²C1
B. JI²C2
C. TPM Enable

2-8 Onboard Indicators

GLAN LEDs

Two GLAN ports (LAN 1 and LAN 2) are located on the I/O backpanel on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, and the Link LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

Note: LAN 2 Port and the second LAN Controller are available on the PDSBM-LN2/PDSBM-LN2+ only.

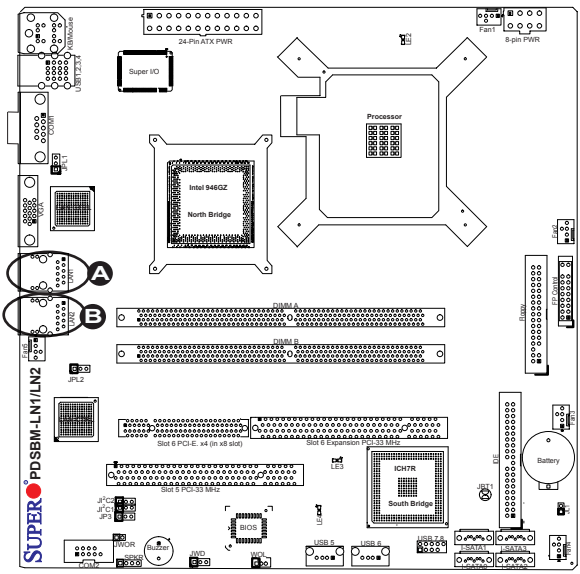


Back View

(When viewing from the back of the system)

GLAN Activity LED Indicator LED Settings		
Color	Status	Definition
Active	Flashing	Active

GLAN Link LED Indicator LED Settings	
LED Color	Definition
Off	No Connection or 10 Mbps
Green (On)	100 Mbps
Amber (On)	1 Gbps



A. GLAN Port1 LEDs

B. GLAN Port2 LEDs

CPU VRM Overheat LED Indicator (LE2)

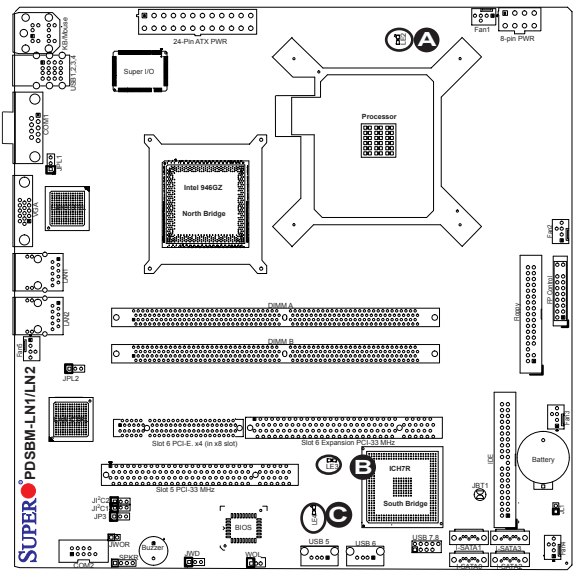
A CPU VRM Overheat LED is located at LE2 on the motherboard. When the temperature of CPU VRM is normal, the CPU VRM Overheat LED is off. When the CPU VRM is over 90°C, the CPU VRM Overheat LED will turn yellow, and the CPU will slow down to prevent the CPU VRM from overheating. See the layout below for the LED location.

CPU VRM Overheat LED LED Settings	
LED Color	Definition
Off	CPU VRM Temperature: Normal
Yellow	CPU VRM over 90°C, CPU slows down

POST Code LED Indicators (LE3, LE4)

Two POST Code LED Indicators are located at LE3 and LE4 on the motherboard. These two LEDs are used to display POST (Power On Self Test) Code Messages through different sets of green and yellow light combinations. Refer to the table on the right for POST Code Messages. See the layout below for the LED location.

POST Code LED Indicators LED Settings		
LE3 (Green)	LE4 (Yellow)	POST Code Message
Blinking	Blinking	Memory Initialization @ POST 28h
Blinking	On	VGA Initialization @ POST 4Ah
Off	Off	Boot to OS @ POST C0h
On	Blinking	PCI Initialization @ POST 49h



A. CPU VRM OH LED (LE2)
B. POST Code Message LED (LE3)
C. POST Code Message LED (LE4)

2-9 Floppy Drive and IDE Hard Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

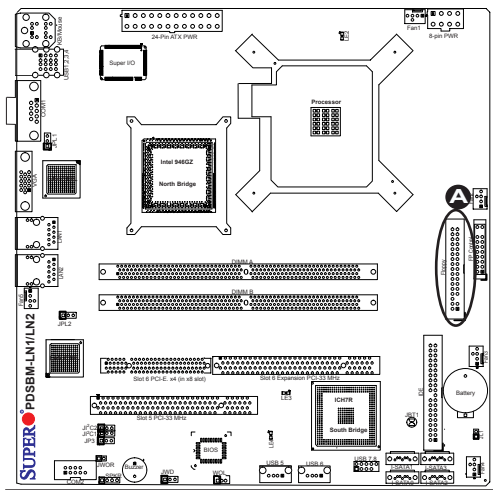
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is located at J22. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette



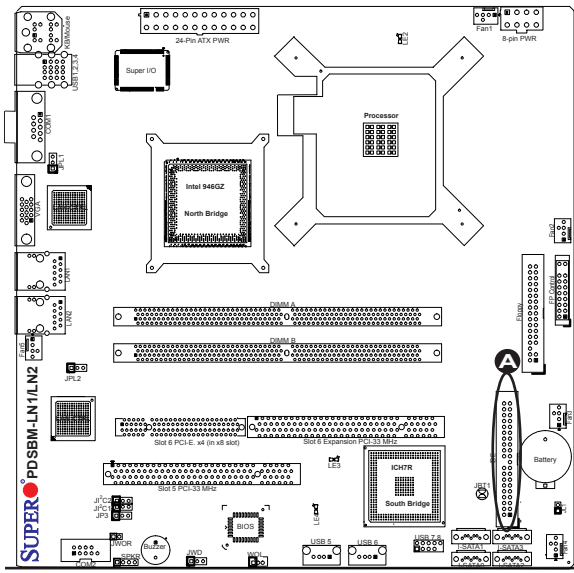
A. Floppy

IDE Connector

An IDE Connector is located at J4 on the motherboard. See the table on the right for pin definitions.

IDE Connector Pin Definitions

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground
41	Vcc	42	Vcc
43	Ground	44	No Connection



A. IDE

Chapter 3
Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or removing any hardware components.

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install a CPU and heatsink (-making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.
5. Use the correct type of onboard CMOS battery as specified by the Manufacturer. Do not install the CMOS battery upside down to avoid possible explosion.
6. Make sure the 8-pin 12v power connector at J41 is connected to your power supply.

No Power

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Make sure that all jumpers are set to their default positions.
3. Check if the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to Appendix A for details on beep codes.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. You should be using unbuffered DDR2 memory (see the next page). Also, it is recommended that you use the same memory speed for all DIMMs in the system. See Section 2-4 for memory limitations.
3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
4. Check the power supply voltage 115V/230V switch.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our website at (http://www.supermicro.com/support/bios/).

Note: Not all BIOS can be flashed; it depends on the modifications to the boot block code.

3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your

system first boots up)

- System configuration
  An example of a Technical Support form is on our website at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com, by phone at:(408) 503-8000, option 2, or by fax at (408)503-8019.

3-3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+ supports **unbuffered,** DDR2-533/667MHz memory modules. See Section 2-4 for details on installing memory.

Question: After I have installed 4GB of memory, why does BIOS detect less than 4GB of memory during POST? Why isn't 4GB of memory available for operational use?

Answer: Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. For Microsoft Windows users: Microsoft implemented a design change in Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the Physical Address Extension (PAE) mode behavior to improve driver compatibility. For more information, please refer to Microsoft's website at: http://support.microsoft.com/kb/888137. (Refer to Section 2-4 for more details).

Question: How do I update my BIOS?

Answer: It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable device or a USB pen. Run the batch file using the format flash.bat filename.rom from your bootable device or USB pen to flash the BIOS. Then, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, bootup the system to the floppy disk. The BIOS utility will automatically flash the

BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows and security and audio drivers.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete. For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4
BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the PDSBM-LN1/PDSBM-LN2/PDSBM-LN2+. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro website <http://www.supermicro.com> for any changes to the BIOS not reflected in this manual.

System BIOS

BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS Utility stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS logic, enabling it to retain system parameters. Each time the computer is powered on, the computer is configured with the values stored in the CMOS logic by the system BIOS, which gains control at boot-up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible boot failure.

4-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate option from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see the next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu.

Press the <Delete> key to enter Setup

4-3 Main BIOS Setup

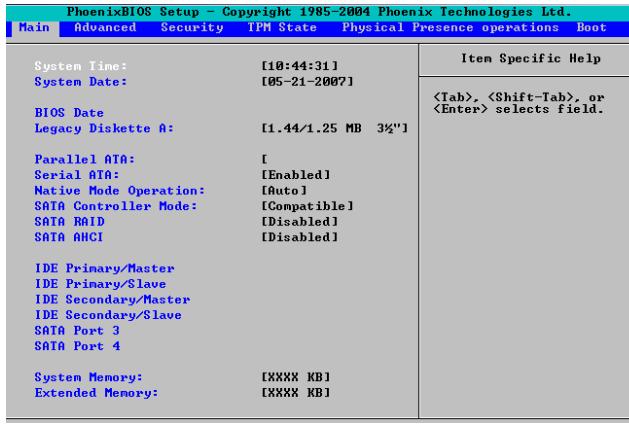
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu



Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Date

The item displays the date that the BIOS was built.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

Parallel ATA

This setting allows the user to enable or disable the function of the Parallel ATA. The options are Disabled and **Enabled**.

Serial ATA

This setting allows the user to enable or disable the function of the Serial ATA. The options are Disabled and **Enabled.**

Native Mode Operation

This setting allows the user to configure the native ATA mode settings. The options are: Parallel ATA, Serial ATA, Both, and **Auto**. (**Note**: Some operating systems might not support Native Mode.)

SATA Controller Mode

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native Mode. (**Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.)**

When the SATA Controller Mode is set to Enhanced, the following items will display:

Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (For the Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select either Intel or Adaptec Host RAID firmware to be activated. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

ICH RAID Code Base

The default setting is the **Intel** SATA RAID utility. (For Intel HostRAID Setup Instructions, please refer to Appendix C.)

SATA AHCI

Select Enabled to enable the function of the Serial ATA Advanced Host Interface. (Take caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

▶IDE Primary Master/Slave, IDE Secondary Master/Slave, SATA Port3 and SATA Port4

These settings allow the user to set the parameters of IDE Primary Master/Slave, IDE Secondary Master/Slave, SATA Port3/SATA Port4 slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of SATA drives. Select **Auto** for the BIOS to automatically set the SATA drive's capacity, number of heads, etc.) Enter a number from 1-39 to select a predetermined type of the HDD drive. Select User to allow the user to enter the parameters of the HDD drive installed at this connection. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used for multi-sector transferring. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

32-Bit I/O

Select Enabled to enable the function of a 32-bit IDE data transfer. The options are Enabled and **Disabled**.

LBA Mode Control

This item allows the user to specify if the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled.**

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to select the Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

System Memory

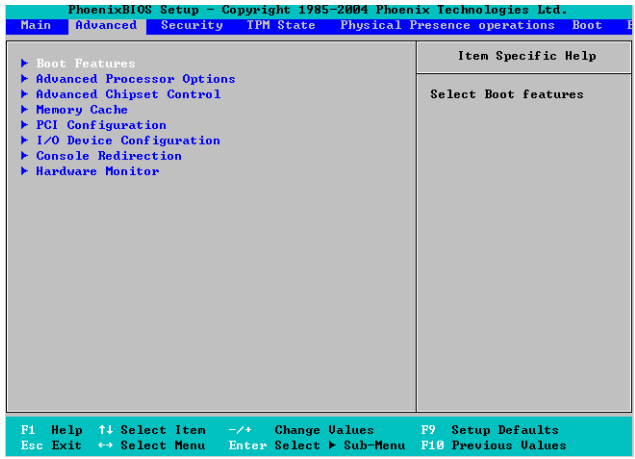
This item indicates the size of the system memory detected by the BIOS during POST.

Extended Memory

This item indicates the size of the extended memory detected by the BIOS during POST.

4-4 Advanced Setup

Choose the Advanced Menu from the Phoenix BIOS Setup Utility with the arrow keys. You should see the following display. The items with a triangle beside them have sub-menus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following settings.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

Quiet Mode

This setting allows you to **Enable** or Disable the graphic logo screen display during bootup.

POST Beep

Set to **Enabled** to activate the alarm if an error occurs during bootup. If set to Disabled, the alarm will not be triggered when a boot error occurs. One single POST beep is normal.

ACPI Mode

Use the setting to determine whether you want to use the ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Enabling Multi-Media Timer

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for OS use. The options are Yes and **No**.

Power Button Behavior

If set to **Instant-Off**, the system will power on or power off immediately as soon as the user presses the power button. If set to 4-Second Override, the system will be powered on or off when the user presses the power button more than 4 seconds. The options are **Instant-Off** and 4-Second Override.

Resume On Modem Ring

Select On to "wake your system up" when an incoming call is received by your modem. The options are On and **Off**.

Resume On PME#

Select On to "wake your system up" from the PME#. The options are On and **Off**.

Power Loss Control

This setting allows you to decide how the system will react when power returns after a sudden power loss. The options are Stay Off, Power On, and **Last State**.

Watch Dog

Select Enabled to automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration settings during bootup.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This item indicates the speeds of the processor(s) installed on the motherboard.

Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default** and x9.

Frequency High Ratio (Available when supported by the CPU.)

The feature allows the user to set high ratio internal frequency multiplier for Intel SpeedStep CPUs. The options are: **x12**, x13, x14, x15, x16, x17 and x18. (**Note**: If a wrong ratio which is not supported by the CPU is selected, the system may hang. If this happens, clear CMOS to recover the system.)

Core-Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's website for more information.) The options are Disabled and **Enabled.**

Hyper-threading (Available when supported by the CPU.)

Set to Enabled to use the Hyper-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are **Disabled** and Enabled.

Fast String Operations (Available when supported by the CPU.)

Set to **Enabled** to enable the fast string operations for special CPU instructions. The options are Disabled and **Enabled**.

Compatible FPU Code (Available when supported by the CPU.)

Set to Enabled to keep the contents of the last instruction Operating Code (OP Code) in the floating point (FP) state. The options are **Disabled** and Enabled.

Split Lock Operation

Set to **Enabled** to mask alignment check exceptions for split-lock transactions. The options are Disabled and **Enabled**.

Thermal Management 2 (Available when supported by the CPU.)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

Adjacent Cache Line Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are Disabled and **Enabled**.

Set Maximum Ext. CPUID=3

When set to Enabled, the Maximum Extended CPUID will be set to 3. The options are **Disabled** and Enabled.

Echo TPR

Set to **Enabled** to prevent xTPR messages from being sent to the system. The options are Disabled and **Enabled**.

C1 Enhanced Mode (Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent CPU overheating. The options are Enabled and **Disabled**. (***Note:** please refer to Intel's website for detailed information.)

Intel® Virtualization Technology (Available when supported by the CPU.)

Select Enabled to use the Virtualization Technology and allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. **Note**: If you have made any change to this setting, please power off and restart the system for the change to take effect. Please refer to Intel's website for detailed information.

No Execute Mode Memory Protection (Available when supported by the CPU and the OS.)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack. The options are Disabled and **Enabled**.

***Note**: This feature is available when it is supported by your OS and your CPU. Please refer to Intel's and Microsoft's websites for more information.

Intel Speed Step Support (Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology, allowing the system to automatically adjust processor voltage and core frequency in order to reduce power consumption and heat dissipation. If set to Enabled, only native mode is supported. The options are Enabled and **Disabled**. Please refer to Intel's website for detailed information.

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take Caution when changing the Advanced settings. An Incorrect setting, a very high DRAM frequency or a wrong DRAM timing may cause the system to malfunction. When this occurs, revert to the default setting.

Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

Default Primary Video Adapter

This feature allows the user to select the video device used by the BIOS during the POST routines. If set to **Auto**, PEG, PCI, IGD (Internal Graphics Device) devices will be selected. If set to IGD (Internal Graphics Device), IGD and PCI devices will be selected. If set to PEG, PEG and PCI devices will be selected. If set to PCI, PCI, PEG and IGD devices will be selected.

On-chip Graphics (IGD) Enable

Select **Auto** to automatically enable an internal graphics device if it is detected. The options are Disabled and **Auto**.

DVMT 3.0 Mode

This feature allows the user to configure the DVMT 3.0 Graphics Memory that the driver will allocate for Internal Graphics Device use. The options are Fixed, **DVMT** and Combo.

Pre-allocated Memory Size

This feature allows the user to set the total amount of Pre-allocated graphics memory to be used by the Internal Graphics Device. The options are 1 MB and **8 MB**.

Total Graphics Memory

This feature allows the user to set the total amount of graphics memory (including: pre-allocated, fixed and DVMT memory) to be used by the Internal Graphics Device. The options are 64 MB, 128 MB and **256 MB**.

Fixed Graphics Memory

This feature displays the total fixed graphics memory detected by the system.

DVMT Graphics Memory

This feature displays the total DVMT graphics memory detected by the system.

USB Function

Select Enabled to enable the function of the USB devices specified. The settings are **Enabled** and Disabled.

Legacy USB Support

This setting allows you to enable support for the Legacy USB devices. The settings are **Enabled** and Disabled.

▶Memory Cache

Memory Cache

This setting allows the user to enable or disable the functions of Memory Cache. The options are **Enabled** and Disabled.

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) its data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable the function, and this area will be reserved for Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and be written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory to optimize CPU operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or be written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512K-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory to optimize CPU operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or

written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1 MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory to optimize CPU operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires write-combining configuration with 4GB or more memory. The options are **Enabled** and Disabled.

▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

▶Onboard PCI-Exp. x1 GNIC1

Access the submenu for each of the settings above to make changes to the following:

PCI Express Port#5 GNIC1

Select Enabled to always enable PCI-Ex1 Port#5 GNIC1. Select Disabled to disable Port#5 GNIC1. The options are **Auto**, Enabled and Disabled.

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the device specified as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, please change this setting and try again. A different OS requires a different Bus Master clock rate**.**

▶Onboard PCI-Exp. x1 GNIC2 (*For PDSBM-LN2/LN2+ Only)

Access the submenu for each of the settings above to make changes to the following:

PCI Express Port#6 GNIC2

Select Enabled to always enable PCI-Ex1 Port#6 GNIC2. Select Disabled to disable PCI-Ex1 Port#6 GNIC2. The options are **Auto**, Enabled and Disabled.

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the device specified as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, please change this setting and try again. A different OS requires a different Bus Master clock rate**.**

▶PCI-E x4 Slot 6/PCI 33 Slot 5/PCI 33 Slot 6

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the device specified as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, please change this setting and try again. A different OS requires a different Bus Master clock rate**.**

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select the clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz,** and 16MHz.

Serial Port A

This setting allows you to configure Serial Port A settings. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to configure Serial Port B settings. The options are **Enabled** (user defined), Disabled, Auto (-BIOS controlled) and OS Controlled.

Mode

This setting allows you to select the type of device that will be connected to Serial Port B. The options are **Normal**, IR (for an infrared device) and ASK_IR.

Base I/O Address

This setting allows you to select the base I/O address for Serial Port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port B. The options are **IRQ3** and IRQ4.

Floppy Disk Controller

This setting allows you to configure Floppy Disk Controller settings. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- and OS-controlled).

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

Console Type

This item allows you to set the console type for console redirection. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

This item allows you to decide if you want to continue with console redirection after the POST routine. The options are On and **Off**.

▶Hardware Monitoring

CPU Overheat Temperature

This option allows the user to set a CPU temperature overheat threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 75°C, 80°C, 85°C and 90°C. (**Note**)

Highlight this and hit <Enter> to see monitor data for the following items:

CPU Temperature

The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm:

The Default Alarm – the Overheat LED and system buzzer will activate if the High condition continues for some time after it is reached. The CPU fan will run at full speed to bring the CPU temperature down. If the CPU temperature still increases even with the CPU fan running at full speed, the system buzzer will activate and the Overheat LED will turn on.

The Early Alarm – the Overheat LED and system buzzer will be activated exactly when the High level is reached. The CPU fan will run at full speed to bring the CPU temperature down.

Note: In both the alarms above, please take immediate action as shown below. See CPU Overheat Alarm to modify the above alarm settings.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems. Note: the system may shut down if it continues for a long period to prevent damage to the CPU.

Notes: The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature

Fan1-Fan5 Speeds: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select 3-pin if your chassis uses 3-pin fans. Select 4-pin if your chassis uses 4-pin fans. Select **Disable** to disable the fan speed control function and allow the onboard fans to constantly run at full speed (12V). The Options are: **1. Disable (Full Speed @12V)**, 2. 3-pin Servers, 3. 3-pin Workstations, 4. 4-pin Servers, and 5. 4-pin Workstations.

Voltage Monitoring

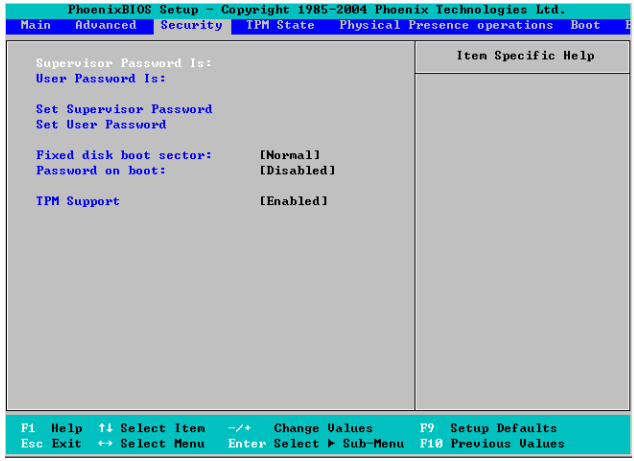
The following items will be monitored and displayed:

V-CPU, Vdimm, 1.5V, 3.3V/3.3V, Standby, 5V, 12V, Vbat.

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

4-5 Security Settings

Choose the Security menu from the Phoenix BIOS Setup Utility with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security TPM State Physical Presence operations Boot
Item Specific Help
Supervisor Password Is:
User Password Is:
Set Supervisor Password
Set User Password
Fixed disk boot sector: [Normal]
Password on boot: [Disabled]
TPM Support [Enabled]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Supervisor Password Is:

This item indicates if a supervisor password has been entered for the system. Clear means such a password has not been used, and Set means a supervisor password has been entered for the system.

User Password Is:

This item indicates if a user password has been entered for the system. Clear means such a password has not been used, and Set means a user password has been entered for the system.

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Fixed Disk Boot Sector

Select **Normal** to enable the function of Write-Protect to protect the boot sector on the hard drives against viruses.

Password on Boot

This setting allows you to determine if a password is required for a user to enter the system at system boot. The options are Enabled (-a password is required) and **Disabled** (-a password is not required).

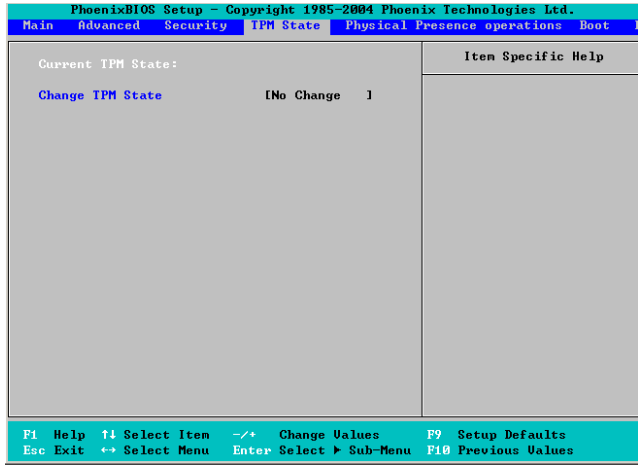
Trusted Platform Support

Select Enabled to enable support for trusted platforms and allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Enabled and **Disabled**.

If set to Enabled, the TPM State screen displays.

4-6 TPM (Trusted Platform Modules) State (For PDSBM-LN2+ only. This option is available when TPM is enabled in the Security menu.)

Choose the TPM State menu from the Phoenix BIOS Setup Utility with the arrow keys. You should see the following display.


PhoenixBIOS Setup – Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security TPM State Physical Presence operations Boot
Current TPM State:
Change TPM State [No Change]
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Current TPM State

This item shows the current TPM State only.

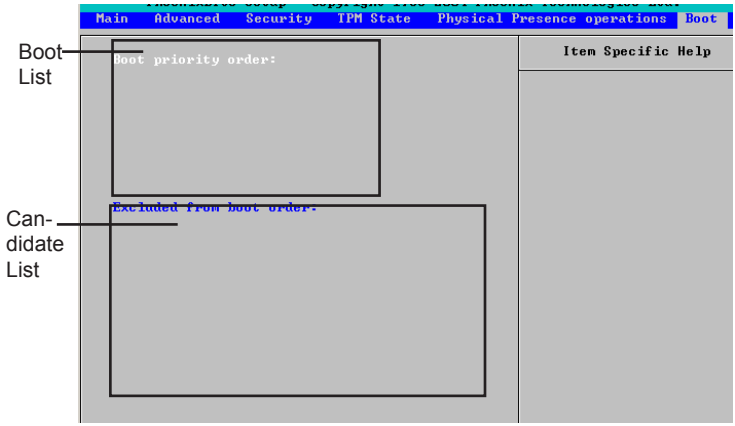
Change TPM State

Select "Enabled & Activate" to enable TPM support for the system. Select De-activate & Disabled to disable the functionality of TPM support. If "No Change" is selected, no changes will be done to the current TPM State. Select Clear to clear or erase all information related to TPM support.

If set to "Clear", the sub-menu: Physical Presence Operations will appear. Select Reject to cancel the selection. Select Execute to proceed with selection. All information related to TPM Support will be erased.

4-7 Boot Settings

Choose the Boot menu from the Phoenix BIOS Setup Utility with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

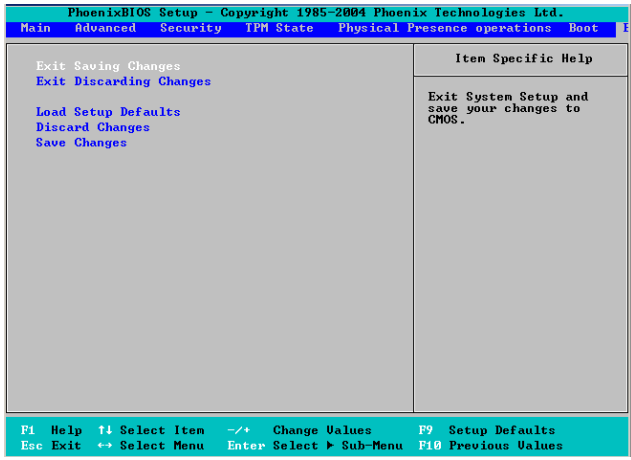


Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the boot order sequence as specified. The boot functions for the devices included in the candidate list are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the boot list (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become bootable. See details on how to change the boot order of a device in the "Item Specific Help" window.

4-8 Exit

Choose the Exit menu from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security TPM State Physical Presence operations Boot
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
Item Specific Help
Exit System Setup and save your changes to CMOS.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you have made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you have made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you have made. You will remain in the Setup utility.

Appendix A
BIOS POST Messages

During Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Failure Fixed Disk
Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

Stuck key
Stuck key on keyboard.

Keyboard error
Keyboard not working.

Keyboard Controller Failed
Keyboard controller failed test. May require replacing keyboard controller.

Keyboard locked - Unlock key switch
Unlock the system to proceed.

Monitor type does not match CMOS - Run SETUP
Monitor type not correctly identified in Setup

Shadow Ram Failed at offset: nnnn
Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

System RAM Failed at offset: nnnn
System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

Extended RAM Failed at offset: nnnn Extended memory not working or not configured properly at offset **nnnn.**

System battery is dead - Replace and run SETUP
The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

System CMOS checksum bad - Default configuration used
System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

System timer error
The timer test failed. Requires repair of system board.

Real time clock error
Real-Time Clock fails BIOS hardware test. May require board repair.

Check date and time settings
BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Previous boot incomplete - Default configuration used
Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

Memory Size found by POST differed from CMOS
Memory size found by POST differed from CMOS.

Diskette drive A error
Diskette drive B error
Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

Incorrect Drive A type - run SETUP
Type of floppy drive A: not correctly identified in Setup.

Incorrect Drive B type - run SETUP
Type of floppy drive B: not correctly identified in Setup.

System cache error - Cache disabled
RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

CPU ID:
CPU socket number for Multi-Processor error.

EISA CMOS not writeable
ServerBIOS2 test error: Cannot write to EISA CMOS.

DMA Test Failed
ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

Software NMI Failed
ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

Fail-Safe Timer NMI Failed
ServerBIOS2 test error: Fail-Safe Timer takes too long.

Device Address Conflict
Address conflict for specified **device.**

Allocation Error for: device
Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

CD ROM Drive
CD ROM Drive identified.

Entering SETUP ...
Starting Setup program

Failing Bits: nnnn
The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

Fixed Disk n
Fixed disk **n** (0-3) identified.

Invalid System Configuration Data
Problem with NVRAM (CMOS) data.

I/O device IRQ conflict
I/O device IRQ conflict error.

PS/2 Mouse Boot Summary Screen:
PS/2 Mouse installed.

nnnn kB Extended RAM Passed
Where **nnnn** is the amount of RAM in kilobytes successfully tested.

nnnn Cache SRAM Passed
Where **nnnn** is the amount of system cache in kilobytes successfully tested.

nnnn kB Shadow RAM Passed
Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

nnnn kB System RAM Passed
Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

One or more I2O Block Storage Devices were excluded from the Setup Boot Menu
There was not enough room in the IPL table to display all installed I2O block-storage devices.

Operating system not found
Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

Parity Check 1 nnnn
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

Parity Check 2 nnnn
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.**

Press <F1> to resume, <F2> to Setup, <F3> for previous
Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

Press <F2> to enter Setup
Optional message displayed during POST. Can be turned off in Setup.

PS/2 Mouse:
PS/2 mouse identified.

Run the I2O Configuration Utility
One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

System BIOS shadowed
System BIOS copied to shadow RAM.

UMB upper limit segment address: *nnnn*
Displays the address ***nnnn*** of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

Video BIOS shadowed
Video BIOS successfully copied to shadow RAM.

Notes

Appendix B
BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the Phoenix BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. It may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep w/Overheat LED on - system overheat

Terminal POST Errors

If a terminal type of error occurs, the BIOS will shut down the system. Before doing so, it will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen. The following is a list of codes that may be written to port 80h.

POST Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Reset PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size

POST Code	Description
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line ***xxxx****
2Eh	1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot (optional)
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board (optional)
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt “Press <ESC> to enter SETUP”
5Bh	Disable CPU cache

POST Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring (optional)
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs (optional)
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs and shadow if successful. One long, two short beeps on checksum failure

POST Code	Description
99h	Check for SMART Drive (optional)
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase <ESC> prompt
AAh	Scan for <ESC> key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST (optional)
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS and PPM Structures
B9h	Prepare Boot
BAh	Initialize SMBIOS
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error flags
C6h	Console redirection init.
C7h	Unhook INT 10h if console redirection enabled
C8h	Force check (optional)
C9h	Extended ROM checksum (optional)
CDh	Reclaim console redirection vector

POST Code	Description
D2h	Unknown interrupt
D4h	Check Intel Branding string
D8h	Alert Standard Format initialization
DEh	Log error if micro-code not updated properly

The following are for boot block in Flash ROM

POST Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects errors on 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (***xxxx***) indicating the address line or bits that have failed. For example, “2C 0002” means address line 1 (bit one set) has failed. “2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the low-order byte of the error. It repeats this sequence continuously.

Notes

Appendix C
Intel HostRAID Installation Instructions

After all the hardware has been installed, you must first configure Intel's ICH7R SATA RAID before you install the Windows Operating System and other software drivers.

Important Notes to the User:

Note 1: If you do not wish to configure onboard SATA RAID functions, please go directly to Section C-2, and Appendix D for the Operating System & Other Software Installation.

Note 2: This chapter describes RAID Configuration Instructions for the Intel ICH RAID Controller designed for the Windows OS.

C-1 Introduction to Serial ATA and Parallel ATA

To configure the SATA RAID functions, you must first use the Intel ICH7R SATA RAID Utility program to configure the RAID Level that you desire before installing the Windows XP/2000/2003 operating system and other software drivers. (The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard.) **Note**: The current version of the ICH7R SATA RAID Utility can only support Windows XP/2000/2003 Operating Systems.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link, which supports transfer rates up to 3Gbps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA are limited to a length of 40cm, while Serial ATA cables can be up to one meter in length. Overall, SATA provides better functionality than PATA.

Introduction to Intel ICH7R Serial RAID

Located in the South Bridge of the Intel 82946GZ chipset, the I/O Controller Hub (ICH7R) provides the I/O subsystem with access to the rest of the system. It supports a 2-channel UltraATA/100 Bus Master IDE controller (PATA) and four Serial ATA (SATA) ports. The ICH7R supports the following PATA and SATA device configurations: Legacy mode and Native mode.

RAID Configurations

The following types of RAID configurations are supported:

RAID 0 (Data Striping): this writes data in parallel, interleaved ("striped") sections of two hard drives. Data transfer rate is doubled over using a single disk.

RAID1 (Data Mirroring): an identical data image from one drive is copied to another drive. The second drive must be the same size or larger than the first drive.

RAID 10 (Striping & Mirroring): RAID 0 and 1 schemes are combined (without parity information) to get the benefits of both.

RAID 5: both data and parity information are striped and mirrored across three or more hard drives.

Intel Matrix Storage

The Intel Matrix Storage, supported by the ICH7R, allows the user to create RAID 0 and RAID1 set by using only two identical hard disk drives. The Intel Matrix Storage Technology creates two partitions on each hard disk drive and generate a virtual RAID0 and RAID1sets. It also allows you the change the HDD partition size without any data.

Configuring BIOS settings for SATA RAID Functions (Native Mode)

1. Press the <Del> key during system bootup to enter the BIOS Setup Utility.

Note: If it is the first time powering on the system, we recommend you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Settings. Once in the "Exit" settings, Scroll down to select "Load Optimized Default Settings" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings for the BIOS.

3. Use the arrow keys to select the "Main" section in BIOS.

4. Scroll down to "SATA Control Mode" and press the <Enter> key to select "Enhanced"

5. Scroll down to "SATA RAID Enabled" and press <Enter>. Then, select "Enabled."
6. Scroll down to "Exit". Select "Exit Saving Changes" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

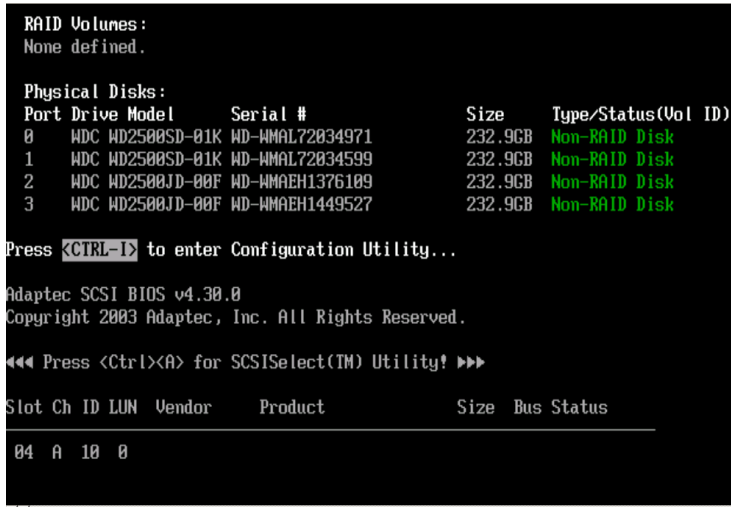
7. Once you've exited the BIOS Utility, the system will re-boot.

8. During the system boot-up, press the <Ctrl> and <I> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: Press <Ctrl> <I> for Intel RAID Configuration Utility.

Using the Intel ICH7R SATA RAID Utility Program

1. Creating, Deleting and Resetting RAID Volumes:

a. After the system exits from the BIOS Setup Utility, the system will automatically reboot. The following screen appears after Power-On Self Test.

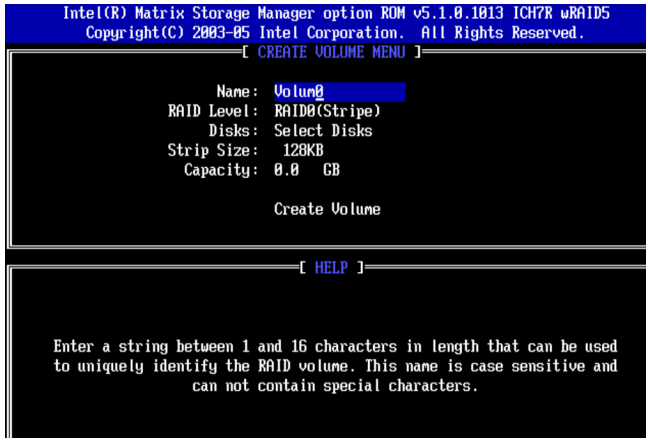

RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 WDC WD2500SD-01K WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01K WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00F WD-WMAEH1376109 232.9GB Non-RAID Disk
3 WDC WD2500JD-00F WD-WMAEH1449527 232.9GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...
Adaptec SCSI BIOS v4.30.0
Copyright 2003 Adaptec, Inc. All Rights Reserved.
Press <Ctrl><A> for SCSISelect(TM) Utility!
Slot Ch ID LUN Vendor Product Size Bus Status
04 A 10 0

b. When you see the above screen, press the <Ctrl> and the <I> keys simultaneously to have the main menu of the SATA RAID Utility appear:

(**Note**: All graphics and screen shots shown in the manual are for reference only. The screen shots shown in the manual do not imply Supernicro's endorsement or non-endorsement on any 3rd party's product. Your screens may or many not look exactly the same as the graphics shown in this manual.)

Creating a RAID 0 Volume:

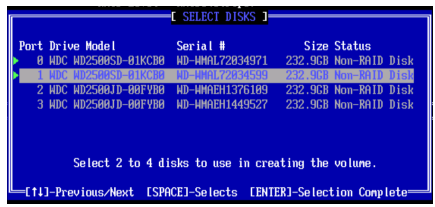
a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volum0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 0 set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select RAID 0 (Stripe) and hit <Enter>.

d. When the Disks item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (*See the note on Page C-3) displays:


[SELECT DISKS]
Port Drive Model Serial # Size Status
0 WDC WD2500SD-01KCB0 WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01KCB0 WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00FYB0 WD-WMAEH1376109 232.9GB Non-RAID Disk
3 WDC WD2500JD-00FYB0 WD-WMAEH1449527 232.9GB Non-RAID Disk
Select 2 to 4 disks to use in creating the volume.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete

e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

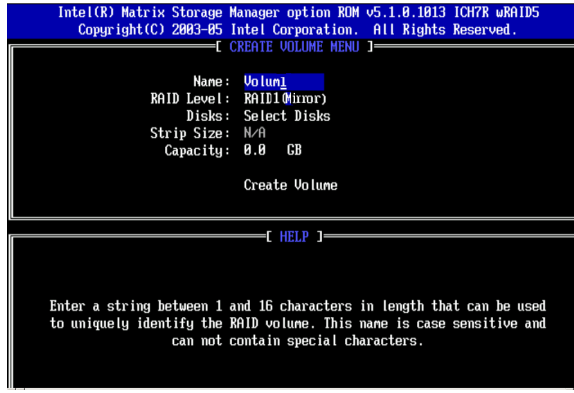
f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranging from 4 KB to 128 KB for the RAID 0 array, and hit <Enter>. (*Note: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.)

g. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

h. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 1 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volum1
RAID Level: RAID1(Mirror)
Disks: Select Disks
Strip Size: N/A
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 1 set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select RAID 1 (Mirror) and hit <Enter>.

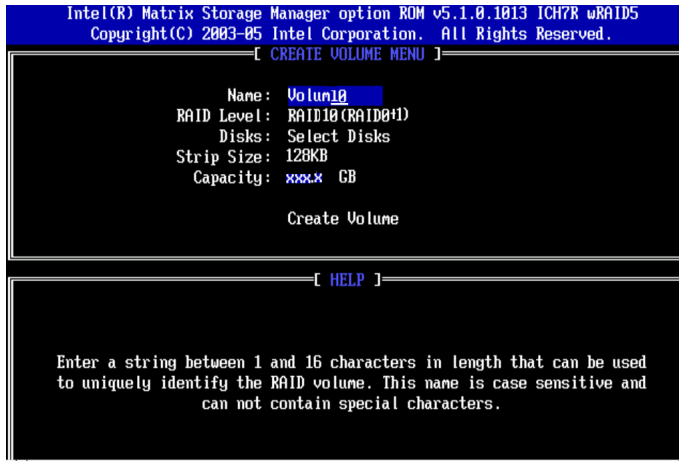
d. When the Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

e. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

f. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 10 (RAID 1+ RAID 0):

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volum10
RAID Level: RAID10(RAID0+1)
Disks: Select Disks
Strip Size: 128KB
Capacity: xxx.x GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 10 set and press <Enter>.

c. When RAID Level item is highlighted, use the <Up Arrow>, <Down Arrow> keys to select RAID 10 (RAID1 + RAID0) and hit <Enter>.

d. When the Stripe Size is highlighted, use the <Up Arrow>, <Down Arrow> keys to select the stripe size from 4 KB to 128 KB for your RAID 10 and hit <Enter>. The default setting is 6 4KB. (**Note**: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size.)

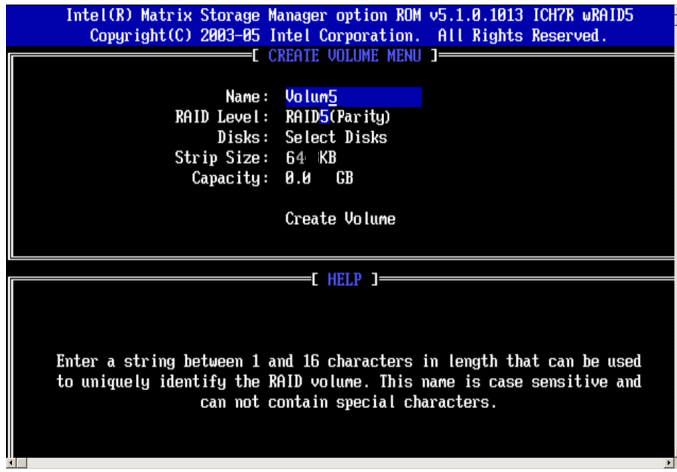
e. When the RAID Volume Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

f. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

g. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 5 Set (Parity):

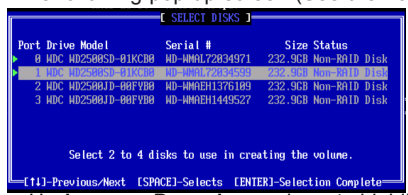
a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volum5
RAID Level: RAID5(Parity)
Disks: Select Disks
Strip Size: 64 KB
Capacity: 0.0 GB
Create Volume
[HELP]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the RAID 5 set and press <Enter>.

c. When the Raid Level is highlighted, use the <Up Arrow>, <Down Arrow> keys to select RAID 5 (Parity) and hit <Enter>.

d. When the Disk item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (See the note on Page C-3) displays:


[SELECT DISKS]
Port Drive Model Serial # Size Status
0 WDC WD2500SD-01KCB0 WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01KCB0 WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00FYB0 WD-WMAEH1376109 232.9GB Non-RAID Disk
3 WDC WD2500JD-00FYB0 WD-WMAEH1449527 232.9GB Non-RAID Disk
Select 2 to 4 disks to use in creating the volume.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete

e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranging from 4 KB to 128 KB for the RAID 5 array, and hit <Enter>. (**Note**: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.)

g. Enter your desired RAID volume capacity and press <Enter> when the capacity item is highlighted. The default setting is the maximum capacity allowed.

h Press Enter when the Create Volume item is highlighted. A warning message displays.

h. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Deleting RAID Volume:

(**Warning**: Be sure to back up your data before deleting a RAID set. You will lose all data on the disk drives when deleting a RAID set.)

a. From the main menu, select item2-Delete RAID Volume, and press <Enter>.

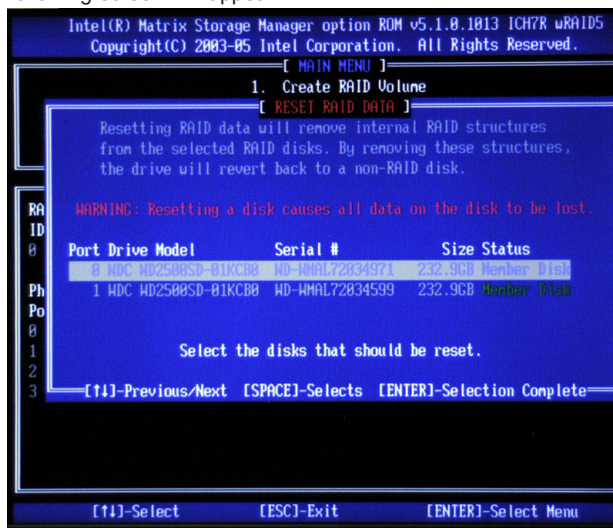
b. Use the <Up Arrow>, <Down Arrow> keys to select the RAID set you want to delete and press <Del>. A Warning message displays.

c. When asked "Are you sure you want to delete this volume (Y/N), press "Y" to delete the RAID volume, or type "N" to go back to the Delete Volume menu.

Resetting to Non-RAID and Resetting a RAID HDD

Warning: Be cautious when you reset a RAID volume HDD to non-RAID or Resetting a RAID HDD. Resetting a RAID volume HDD or Resetting a RAID HDD will reformat the HDD and delete all internal RAID structure on the drive.

a. From the main menu, select item3-Reset Disks to Non- RAID, and press <Enter>. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
[RESET RAID DATA]
Resetting RAID data will remove internal RAID structures
from the selected RAID disks. By removing these structures,
the drive will revert back to a non-RAID disk.
WARNING: Resetting a disk causes all data on the disk to be lost.
Port Drive Model Serial # Size Status
0 WDC WD2500SD-01KCB0 WD-WMAL72034971 232.9GB Member Disk
1 WDC WD2500SD-01KCB0 WD-WMAL72034599 232.9GB Member Disk
Select the disks that should be reset.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

b. Use the <Up Arrow>, <Down Arrow> keys to highlight the RAID set drive to reset and press <Space> to select.

c. Press <Enter> to reset the RAID set drive. A Warning message displays.

d. Press "Y" to reset the drive, or type "N" to go back to the main menu.

Exiting the Intel Matrix Storage Manager Utility:

a. From the main menu, select item4-Exit, and press <Enter>. A warning message will appear.

b. Press "Y" to reset the drive, or type "N" to go back to the main menu.

C-2 Installing the Windows XP/2000/2003 for Systems with RAID Functions

Installing a New Operating System (the Windows XP/2000/2003 OS)

a. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

b. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

c. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

d. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ICH7R into Drive A: and press the <Enter> key.

e. Select the Intel(R)82801GR/GH SATA RAID Controller from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

f. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

g. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

h. After the Windows XP/2000/2003 Installation is completed, the system will automatically reboot.

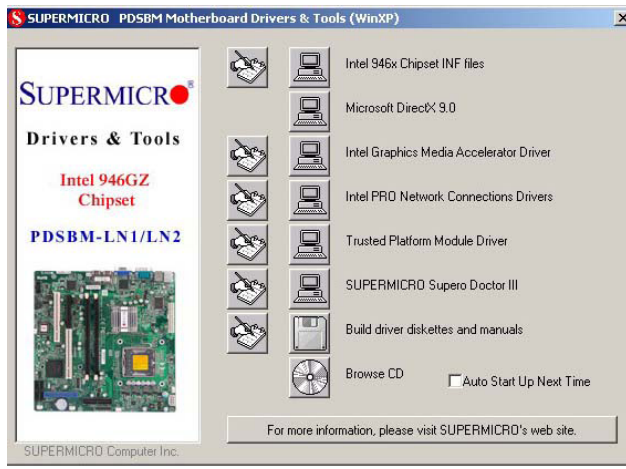
i. Insert the Supermicro Setup CD that came with the package into the CD Drive during system reboot, and the main screen will appear.

Note: the current version of the ICH7R SATA RAID Utility can only support the Windows XP/2000/2003 Operating System.

Appendix D
Software Installation Instructions

D-1 Installing Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.


SUPERMICRO PDSBM Motherboard Drivers & Tools (WinXP)
SUPERMICRO
Drivers & Tools
Intel 946GZ Chipset
PDSBM-LN1/LN2
SUPERMICRO Computer Inc.
Intel 946x Chipset INF files
Microsoft DirectX 9.0
Intel Graphics Media Accelerator Driver
Intel PRO Network Connections Drivers
Trusted Platform Module Driver
SUPERMICRO Supero Doctor III
Build driver diskettes and manuals
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

Driver/Tool Installation Display Screen

Note:

Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. After installing each item, you must re-boot the system before proceeding with the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

D-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figure below for a display of the Supero Doctor III interface.

Note 1: Both default user name and password are ADMIN.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

Supero Doctor III Interface Display Screen-II (Remote Control)

File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Conn.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

(**Note**: SD III Software Revision 1.0 can be downloaded from our Website at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.)

Notes

(Disclaimer Continued)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.